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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,466	02/23/2001	Rory Stewart Turnbull	36-1411	7184
7590	04/05/2004		EXAMINER	
Nixon & Vanderhye 8th Floor 1100 North Glebe Road Arlington, VA 22201-4714			JACKSON, JAKIEDA R	
			ART UNIT	PAPER NUMBER
			2655	
DATE MAILED: 04/05/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/763,466	TURNBULL ET AL.
	Examiner Jakieda R Jackson	Art Unit 2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 05 January 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-22 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 23 February 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

1. In response to the Office Action mailed October 3, 2003, applicant submitted an Amendment filed on January 5, 2004, in which the applicants traversed and requested reconsideration with respect to **claims 1, 4, 6, and 13-14.**
  
2. The partially initialed Form PTO-1449, now includes an initialization/consideration of Bolot et al., and a completed, new PTO-1449 is attached.

### *Drawings*

3. The proposed corrections of the drawings were approved. New formal drawings will be needed if the application is allowed.

***Response to Arguments***

4. Applicant's arguments filed January 5, 2004 have been fully considered but they are not persuasive. Applicant argues that Todoroki fails to discloses "a coder operable to generate a first output providing first data from which a decoder can produce a reconstructed signal and a second output providing second, enhancement, data whereby a decoder receiving both the first and second data can produce a higher quality reconstructed signal" (claim 1).

Applicant also argues that Todoroki fails to disclose "each packet containing primary data which includes first data in respect of a temporal portion of the signal and second, enhancement, data in respect of the same portion of the signal" and "a decoder capable of producing a reconstructive signal from the first data alone and capable of producing a higher quality reconstructed signal from the first and second data together" (claim 13).

Todoroki discloses a time diversity communication method and communication device, hereinafter referenced as a "communication device". Todoroki's communication device is an apparatus for transmission of signals (column 5, line 14) comprising:

a coder (encoder; figure 5, element 41) operable to generate a first output providing first data (data a) from which a decoder can produce a reconstructed signal and a second output providing second, enhancement, data (data b; column 6, line 63 – column 7, line 6) whereby a decoder receiving both the first and second data can

produce a higher quality reconstructed signal (column 2, line 64, continuing to column 3, line 2 and column 6, lines 30-32).

means operable to assemble packets of data (blocks) for transmission (column 5, lines 14- 21), each packet containing:

primary data (data a) which includes the first data in respect of a temporal portion of the signal and the second data (data b) in respect of the same portion of the signal (synchronization; column 7, lines 23-37); and

secondary data which includes the first data in respect of a different temporal portion of the signal but lacks the second data in respect of that portion (figure 6), as discussed in claim 1.

Error correction bits are used to produce a signal and if the errors are corrected, it produces a higher quality than those without the error correction bits (claim 1).

Referring now to claim 13, if the primary data is absent from the buffer, the secondary data is read instead. Todoroki uses a conformity judgment circuit that selects the data that should be read based in the state of the signal (column 7, line 23 – column 8, line 39).

Since the previously discussed is obviated in Todoroki, the later claims (claims 2-12 and 14-20) will remain rejected in view of the listed prior art discussed in the Office Action.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1, 4, 6, 13-14 and 17-22** are rejected under 35 U.S.C. 102(b) as being anticipated by Todoroki (DE 197 13 059 A), also issued as U.S. Patent Number 5,850,419 (citations are for the United States version).

Regarding **claim 1**, Todoroki discloses a time diversity communication method and communication device, hereinafter referenced as a “communication device”. Todoroki’s communication device is an apparatus for transmission of signals (column 5, line 14) comprising:

a coder (encoder; figure 5, element 41) operable to generate a first output providing first data (data a) from which a decoder can produce a reconstructed signal and a second output providing second, enhancement, data (data b; column 6, line 63 – column 7, line 6) whereby a decoder receiving both the first and second data can produce a higher quality reconstructed signal (column 2, line 64, continuing to column 3, line 2 and column 6, lines 30-32).

means operable to assemble packets of data (blocks) for transmission (column 5, lines 14- 21), each packet containing:

primary data (data a) which includes the first data in respect of a temporal portion of the signal and the second data (data b) in respect of the same portion of the signal (synchronization; column 7, lines 23-37); and

secondary data which includes the first data in respect of a different temporal portion of the signal but lacks the second data in respect of that portion (figure 6).

Regarding **claim 4**, Todoroki's communication device different temporal portion is the portion earlier than that represented by the primary data (delayed signal, column 3, lines 24-26).

Regarding **claim 6**, Todoroki's communication device is operable to produce a plurality of outputs providing enhancement data, successive sets of enhancement data representing successive improvements (three or more input digital signals) to reconstruct signal quality, and in which the primary data includes all such outputs and the secondary data includes first data in respect of a like plurality of different temporal portions of the signal and progressively smaller number of sets of second data in respect of those portions (column 10, lines 25-31).

Regarding **claim 13**, Todoroki's communication device is an apparatus for reception of signals comprising:

means for receiving packets of data (figure 1, element 46 and column 3, lines 36-38), each packet containing:

primary data which includes first data in respect of a temporal portion of the signal and second enhancement data in respect of the same portion of the signal (Figure 6); and

secondary data, which includes the first data in respect of a different temporal portion of the signal (figure 6)

a buffer for storing the received packets (figure 5, element 16)

a decoder capable of producing a reconstructed signal from the first (data a) and capable of producing a higher quality reconstructed signal from the first (data a) and second data (data b) together (column 3, lines 54-62 column 7, lines 23-37).

control means operable to read from the buffer the primary data (data a) in respect of successive temporal portions of the signal and to forward them to the decoder and in the event that the primary data in respect of the temporal portion of speech be absent from the buffer, to read instead the secondary data (switches to select one of a or b) in respect of that temporal portion and forward it to the decoder (column 3, lines 43-53 with column 6, line 63 continuing to column 7, line 6).

Regarding **claim 14**, Todoroki's communication device has control means that are operable in the event that secondary data in respect of temporal portion of speech be absent from the buffer to read the second enhancement data, in respect of a temporal portion of the speech signal and forward it to the decoder (column 3, lines 43-53).

Regarding **claim 17**, Todoroki discloses an apparatus for transmission of signals (column 5, line 14) comprising:

a coder (encoder; figure 5, element 41) operable to generate a first output providing first data (data a) from which a decoder can produce a reconstructed signal and a second output providing second, enhancement, data (data b; column 6, line 63 – column 7, line 6) whereby a decoder receiving both the first and second data can produce a higher quality reconstructed signal (column 2, line 64, continuing to column 3, line 2 and column 6, lines 30-32).

means operable to assemble packets of data (blocks) for transmission (column 5, lines 14- 21), each packet containing:

primary data (data a) which includes the first data in respect of a temporal portion of the signal and the second data (data b) in respect of the same portion of the signal (synchronization; column 7, lines 23-37); and

secondary data which includes a duplicate copy of first data (data a and data b are identical; column 7, lines 23-37) the first data in respect of a different temporal portion of the signal but lacks the second data in respect of that portion (figure 6).

Regarding **claim 18**, Todoroki discloses an apparatus for reception of signals comprising:

means for receiving packets of data (figure 1, element 46 and column 3, lines 36-38), each packet containing:

primary data which includes first data in respect of a temporal portion of the signal and second enhancement data in respect of the same portion of the signal (Figure 6); and

secondary data, which includes the first data in respect of a different temporal portion of the signal (figure 6)

a buffer for storing the received packets (figure 5, element 16)

a decoder capable of producing a reconstructed signal from the first data alone (data a) and capable of producing a higher quality reconstructed signal from the first (data a) and second data (data b) together (column 3, lines 54-62 column 7, lines 23-37).

control means operable to read from the buffer the primary data (data a) in respect of successive temporal portions of the signal and to forward them to the decoder and in the event that the primary data in respect of the temporal portion of speech be absent from the buffer, to read instead the secondary data (switches to select one of a or b) in respect of that temporal portion and forward it to the decoder (column 3, lines 43-53 with column 6, line 63 continuing to column 7, line 6).

Regarding **claim 19**, Todoroki discloses a method for transmitting signals (column 5, line 14) comprising:

generating a first output providing first data (data a) from which a decoder can produce a reconstructed signal and a second output providing second, enhancement, data (data b; column 6, line 63 – column 7, line 6) whereby a decoder receiving both the

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first and second data can produce a higher quality reconstructed signal (column 2, line 64, continuing to column 3, line 2 and column 6, lines 30-32).

assembling packets of data (blocks) for transmission (column 5, lines 14- 21), each packet containing:

primary data (data a) which includes the first data in respect of a temporal portion of the signal and the second data (data b) in respect of the same portion of the signal (synchronization; column 7, lines 23-37); and

secondary data which includes the first data (data a and data b are identical; column 7, lines 23-37) the first data in respect of a different temporal portion of the signal but lacks the second data in respect of that portion (figure 6).

Regarding **claim 20**, Todoroki discloses a method for receiving signals comprising:

receiving packets of data (figure 1, element 46 and column 3, lines 36-38), each packet containing:

primary data which includes first data in respect of a temporal portion of the signal and second enhancement data in respect of the same portion of the signal (Figure 6); and

secondary data, which includes the first data in respect of a different temporal portion of the signal (figure 6)

storing the received packets in a buffer (figure 5, element 16)

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producing, via a decoder, a reconstructed signal from the first data alone (data a) and capable of producing a higher quality reconstructed signal from the first (data a) and second data (data b) together (column 3, lines 54-62 column 7, lines 23-37).

reading from the buffer the primary data (data a) in respect of successive temporal portions of the signal and to forward them to the decoder and in the event that the primary data in respect of the temporal portion of speech be absent from the buffer, to read instead the secondary data (switches to select one of a or b) in respect of that temporal portion and forward it to the decoder (column 3, lines 43-53 with column 6, line 63 continuing to column 7, line 6).

Regarding **claim 21 and 22**, Todoroki discloses a method wherein said secondary data includes a duplicate copy of the first data (data a and data b are identical; column 7, lines 23-37).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Todoroki in view of Campana (WO 95 06368).

Regarding **claims 2 and 3**, Todoroki discloses a communication device but lacks that the different temporal portion is the portion later than and the portion directly following the portion represented by the primary data.

Campana suggest, in the abstract, that a first encoded information stream and a second encoded information stream is delayed by a time delay interval.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the communication device of Todoroki such that the different temporal portion is a portion later and a portion directly following the portion represented by the primary data to replace information that has been lost or rendered erroneous.

9. **Claims 5, 7-12 and 15-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Todoroki in view of Yamauchi (U.S. Patent Number 6,122,338).

Regarding claims **5 and 15**, it is well-known to include in each packet a sequence code to indicate the temporal sequence of the primary data contained in the packets and control means operable to determine the temporal sequence of the packets by reference to the sequence code.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Todoroki's communication device by providing a sequence code when forming data into the packets so as to re-assemble possibly out of the sequence packets into proper time sequence, as suggested by Yamauchi (abstract).

Regarding **claims 7, 8 and 16**, Todoroki, as modified, discloses the claimed communication device but lacks the signals being audio signals and the coder being an audio signal coder, for example a sub-band coder, in which the first data include data in respect of lower frequency ones of the coder sub-bands, and the second enhancement include data in respect of higher frequency sub-bands.

Yamauchi discloses sub-band coders that break the incoming signal up into separate frequency bands (column 7, lines 36-38) and that the first data is in respect of lower frequencies (outline data) and the second data in respect of higher frequency sub-band (detail data, abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Todoroki's communication device such that

the coder is a sub-band coder in which the first stream consist of coarsely quantized samples and the second stream consist of additional bit of the same sample, to reduce the level of quantization noise for more audible bands.

Regarding **claim 9**, Todoroki discloses a communication device, but fails to disclose that the first data include binary representations of digital values and the second data include additional bits representing finer resolution of the digital values.

Yamauchi discloses that the first and second data includes additional bits representing finer resolution of the digital values (multi-stage vector quantization, column 8, line 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Todoroki's communication device such that digital values are represented by the additional binary data to more accurately represent the audio data (high quality, abstract).

Regarding **claim 10**, Todoroki discloses an communication device but fails to disclose a sub-band communication device having sub-band filter means, nor bit allocation means and wherein the quantizer has a first output providing first data and second output providing second data both comprising at least one sub-band.

Yamauchi discloses a sub-band communication device comprising:  
filter means to receive a sampled audio signal and to divide the signal into a plurality of sub-band signals each corresponding to a respective frequency sub-band (sub-band partition, figure 9, element 41)  
a quantizer for quantizing the sub-band signals (figure 9, element 43)

bit allocation means for adaptively determining the number of quantization levels to be used by the quantizer in dependence on the signal characteristics (figure 9, element 46); and

wherein the quantizer has a first output for providing said first data, said first data comprising quantized values for one or more of said sub-bands, and a second output for providing said second data, said second data comprising, for at least one of the sub-bands in respect of which quantized values are provided at the first output, additional enhancement bits representing a less coarse quantization (multi-stage vector quantization) of the values for that sub-band or sub-bands (column 8, line 12). The examiner contends that it is known in the art that the quantizer has first data and outputs first data and second output for providing second data; and

wherein the bit allocation means is operable to perform a first allocation operation in which a first predetermined quota of bits for the first output is allocated among the sub-bands followed by a second allocation operation in which a second predetermined quota of bits, for the additional bits at the second output, is allocated among the sub-bands (figure 9, element 46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Todoroki's communication device such that it has filter means to split the input signal into sub-bands, a quantizer to reduce the number of bits needed to represent the signal without degrading the perceived quality of the signal and bit allocation means, to obtain improved compression of speech and to accommodate audio signals.

Regarding **claim 11**, Todoroki discloses a communication device but lacks having the second output providing quantized values for at least one sub-band in respect of which quantized values are not provided at the first output.

Yamauchi discloses low-frequency data as first output and high-frequency data as second output (column 7, lines 61-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Todoroki's communication device such that the second output provides quantized values for at least one sub-band of which quantized values are not provided at the first output, for easier data compression of signals and to provide an efficient method of improving the quality of signals (high quality, abstract).

Regarding **claim 12**, Todoroki discloses a communication device but lacks that the quantizer has at least one further output and the sub-bands are not represented in any lower order output and bit allocation means operable to perform a number of operations equal in number to the number of outputs.

Yamauchi discloses that the quantizer has at least one further output and the sub-bands are not represented in any lower order output (column 7, lines 61-65) and bit allocation means operable to perform a number of operations equal in number to the number of outputs (column 8, lines 13-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Todoroki's communication device such that there is better approximation and less quantization error (high quality, abstract). Since it is obvious to add a third vector quantization stage in Yamauchi's multi-stage vector

quantization, this is suggested also for sub-bands not represented in lower-order output, and produce higher-quality approximations.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

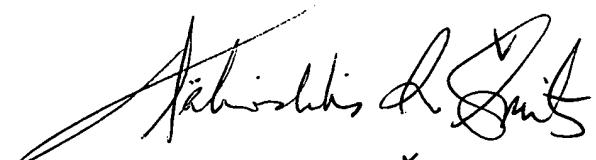
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R Jackson whose telephone number is 703.305.5593. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis I. Smits can be reached on 703. 306-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ  
March 30, 2004



TALIVALDIS IVARS SMITS  
PRIMARY EXAMINER